Effects of Metformin microinjection into lateral ventricles on memory retention of streptozotocin rat model of sporadic Alzheimer's disease.

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Background and Objective: **Insulin regulates many important processes in the central nervous system such as synaptic plasticity, learning and memory. Experimental evidence suggests a link between type 2 diabetes and Alzheimer's disease (AD). Insulin modulates metabolism of beta-amyloid precursor protein in neurons, decreasing the intracellular accumulation of beta-amyloid. The aim of present study, was to investigate the effects of intraventricular injection of Metformin on memory retention in** streptozotocin (STZ) rat model of Alzheimer's disease

Materials and Methods: **56 Male wistar rats (200-250gr) were divided into 7 groups (n=8): control, Sham, STZ, STZ +Salin, STZ +Metformin. For induction of AD, STZ (3 mg/kg, i.c.v, 10 µl each) were administered bilaterally into latral ventricles. 2 weeks later all rats were trained in one trial step-through passive avoidance learning. Saline (5 ul) or Metformin (50,100,200ug/kg, 5 ul, i.c.v) were injected through the guide cannula immediately after training. Retention test was done two days later.**

Results: Our results show that post-training microinjection of Metformin into lateral ventricles improves memory retention in STZ rat model of AD in a dose dependent manner, so that the time spent in the light chamber before entering to the dark area in the STZ +Metformin (200ug/kg) group rats were significantly more than STZ group.

Conclusion: **The results indicated that Metformin is useful for treatment of** Alzheimer's disease

Key words: Alzheimer, Metformin, intra ventricular, passive avoidance learning

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